



Natick Soldier Center Laser Eye Protection Program

Overview:

The goal of the **Laser Eye Protection Program** is to increase the survivability and mobility of the land warrior where lasers are a part of the battlefield scenario. Laser eye protection at certain discrete wavelengths is currently available. However, challenges still remain to extend mission operations to include low light conditions and to provide the ability to complete a mission in a multi-threat laser environment. The laser eye protection program efforts are:

1) the synthesis and characterization of nonlinear optical materials to further understand and develop the third-order effects; 2) the investigation of nonlinear material incorporation techniques seeking to optimize attenuation and increase the damage threshold of the systems; and 3) the transition of reflective technologies to fielded protective eyewear.

Description:

Laser protection against three discrete wavelengths is currently available in the **Sun, Wind, and Dust (SWD) Goggle**, the **Ballistic/Laser Protective Spectacle (B/LPS)**, and the **Special Protective Eyewear, Cylindrical System (SPECS)** configurations. Laser protection is afforded by the incorporation of absorbing dyes into the ballistic protective substrate.

To provide laser protection that is compatible with nighttime and low light as well as daytime operations, dielectric-coated lenses that reflect laser wavelengths have been developed. For protection against lasers in any part of the visible and near-infrared spectrum, research into nonlinear optical phenomena in materials and development of techniques to efficiently incorporate these materials into devices are being conducted.

The program is part of a joint Science and Technology Objective (STO). Together with the Tank & Automotive RDEC (TARDEC) that will "demonstrate a retrofittable wide-angle optical view in a system design which can incorporate limiting or dispersive materials. These new optical systems could replace the current vision blocks and periscopes found in ground vehicles, allowing the soldier to view the battlefield while protected from eye-damaging laser energy, including agile laser weapons."

The program utilizes leveraging of other R&D efforts:

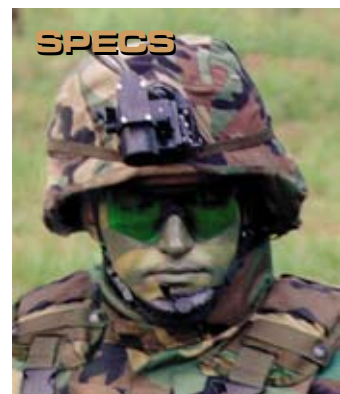
1) the dielectric stack technology (Marine Corps, Air Force and Navy); 2) basic research on nonlinear optical materials (the Army Research Laboratory); 3) thin film technology development (the Small Business Innovative Research Program); 4) collaboration on nonlinear material synthesis and incorporation techniques (Army Research Office contractors); and 5) Natick Soldier Center's participation in the Joint Service Agile Protection Program for development of tunable protection technologies.

Point Of Contact:

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